

ABSTRACT

The present invention includes a flexible, resilient composite spring pivotally connected to the vehicle wheel assembly by standard means such as a ball joint and knuckle. The composite spring is formed having a sinusoidal profile with rectangular cross-section preferably spanning transversely between parallel vehicle wheel assemblies. The composite spring is pivotally connected to the parallel vehicle frames by opposing perpendicular brackets welded to an upper and lower portion of the vehicle frame. A rubber bushing is preferably provided within each bracket and is in contact with opposing sides of the composite spring, allowing the spring to pivot between the vehicle frame. The composite spring is preferably formed with carbon and graphite fibers. The sinusoidal composite spring blank is preferably molded with a neutral axis extending along the length of the spring at a midpoint of the sinusoidal profile. The blank preferably is formed with carbon fibers extending at and below the neutral axis surrounded by glass fibers, both fibers preferably impregnated with a hardening substance. The carbon fibers are successfully located at and below the neutral axis of the blank by pre-loading the mold frame in tension before placing the frame in the mold. Location of the carbon fibers in this manner provides a stronger, more durable composite spring for both a standard and active suspension system.